

## Electrochemotherapy (ECT)

Recommended instructor to student ratio: 1:1

### Category

6. Minor physiological Challenge

### Objective

The Objective of the SOP is to describe the safe and effective way of treating horses with Electrochemotherapy (ECT) whilst under a general anaesthetic.

### Alternatives to animal use

This SOP is required for projects specifically looking at the equid response to ECT and therefore live horses are required to achieve clinically relevant data.

### Equipment

- Electrochemotherapy machine
- L-shaped and needle electrodes
- Sterile ultrasound gel

### Safety and Risk considerations

- Electrocutation risk:
  - Only one person should operate the ECT machine
  - No one can contact the horse whilst the procedure is being performed
  - The ECT machine must have its final charge discharged before returning the electrodes to the machine
  - The electrodes are never to be handled whilst the machine is on.

### Drugs, chemicals or biological agents

None required

### Procedure

1. Connect the electrodes to the back of the machine
2. Connect the double pedal
3. Plug in the power cable
4. Switch on the machine
5. Prepare the animal:
  - a. The animal will undergo a general anaesthesia
  - b. Perform a surgical scrub of the area
6. Wait 6-8 minutes for any injected drug to diffuse
7. Apply sterile ultrasound gel over the entire surface of the tumour
8. Apply the pulsed electrical field:
  - a. Using the L-shaped electrode:
    - i. Apply the electrode to the tumour
    - ii. Press the footswitch "charge" to load the device
    - iii. Press the foot switch "pulse" to deliver pulses
    - iv. Rotate 90 degrees and re-apply the electrodes to the same area
    - v. Press the footswitch "charge" to load the device
    - vi. Press the footswitch "pulse" to deliver the pulses
    - vii. Shift the electrode 1cm and repeat the process until the entire tumour is covered.
  - b. Using the needle electrode:
    - i. Insert the needles into the tumour
    - ii. Press the footswitch "charge" to load the device
    - iii. Press the foot switch "pulse" to deliver pulses
    - iv. Shift the electrodes 0.5cm and repeat the process until the entire tumour has been covered (do not rotate and reapply pulses to the same area as for the L-shaped electrode)

## Impact on wellbeing of animals

The electrical pulse is delivered under a general anaesthetic and monitored by a specialist anaesthetist to ensure the comfort and welfare of the patient. The electrical current is designed to increase cell permeability and does not burn or damage the skin in any way.

## Animal Care

The animal must be monitored by an anaesthetist during the general anaesthetic. Once out of recovery the animal can return to normal hospital care. The animal must be monitored overnight in the hospital.

## Pain Relief

Non-steroidal anti-inflammatories must be administered pre and post operatively for a minimum of 48h. The animals must then be re-assessed by a veterinarian before being discontinued.

## Reuse and repeated use

Treatment with ECT can be conducted under a general anaesthesia every 14 days. As the treatment is focal and doesn't damage the dermis, ECT can be repeated as many times as required.

## Qualification, experience or training necessary to perform procedure

Bachelor degree (or higher qualification) in veterinary science.

## References and relevant links

< List references and relevant web links if appropriate. >